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The Human-Environment Dialog in Award-Winning Children's Picture Books*

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Picture books often play an important role in childhood socialization. Given the seriousness of environmental problems, we ask how natural, modified, and built environments have been portrayed in children's books. To answer this question, we analyze the 296 books receiving Caldecott awards from 1938 to 2008. Two possibilities are explored with respect to content change. Growing concern about critical environmental problems, such as decline in biodiversity and deforestation, may have led to an increase in illustrations and stories about wild animals and the natural environment. Alternatively, the increasing isolation of people from the natural world may have resulted in a decline in the perceived relevance of these environmental issues and resulted in fewer stories and depictions. Our findings support the isolation hypothesis. There have been significant declines in depictions of natural environments and animals while built environments have become much more common. These findings suggest that today's generation of children are not being socialized, at least through this source, toward an understanding and appreciation of the natural world and the place of humans within it.

Because children's picture books often play an important role in socialization (e.g., Houston-Price et al. 2009), researchers have examined the contents of these books to discover how the significant issues of the time are being depicted. As Pescosolido, Grauerholz, and Milkie (1997: 444) point out, "the intended clarity and moral certainty with which adults provide children with tales of their world offer a fortuitous opportunity to examine social relations and belief systems." Efforts to achieve women's and civil rights and protection of the environment represent three of the most publicized and influential social movements in modern American history, and thus, numerous studies have examined portrayals of gender and ethnicity. No studies, however, have examined the way the environment has been depicted.

The purpose of our study is to examine the way the environment has been portrayed in children's picture books and to discover whether this has changed over time. Two sets of events have been taking place in American society that may have led to changes in the way environments are presented. Environmental problems have grown increasingly serious, giving rise to the modern environmental movement. On the other hand, changes such as urbanization and access to television have led to increasing isolation from the natural world. Either of these may have influenced the content of children's books. To the extent that these books play a role in influencing the way children see the world, content changes could have significant consequences for understanding and responding to environmental problems.

The Rise of Environmentalism

The American environmental movement began in the late nineteenth century with the struggle to sustainably conserve natural resources (conservation) and protect wilderness (preservation) (Gottlieb 1993; Nash 2001). Attention waned during World War I, but was followed by a "second wave" that arose in reaction to dust storms and floods during the years of the Great Depression (Mitchell, Mertig, and Dunlap 1992). Our examination of children's books begins with those published in 1937 and thus captures the final years of that era. However, according to Kline (2000), the great majority of Americans during the first half of the twentieth century, however, viewed consumption and urban development as signs of progress and gave little attention to environmental issues.

The modern environmental movement, which brought about an important change in public attitudes, is generally said to have begun in the 1960s. Rachel Carson's 1962 publication of *Silent Spring* is widely credited with helping to bring about this change, and Mitchell, Mertig, and Dunlap (1992) mark 1967 as a transitional year from a conservation movement to an environmental movement with the creation of the Natural Resources Defense Council. The Environmental Protection Agency was founded in 1970, the same year that 20 million Americans participated in the first Earth Day. Nevertheless, Johnson's (2006) analysis of the discourses of environmental organizations from 1970 to 2000 indicates that while new issues, such as air pollution and health, gained increased attention, these concerns tend to be the major focus of small reform and political ecology groups. Large organizations like the Sierra Club and the National Wildlife Federation have continued to place the most emphasis on natural resource and wildlife issues. On the other hand, a number of different discourses, such as deep ecology, ecofeminism, and environmental justice, have developed over time thus increasing the overall breadth and depth of the

environmental movement (Brulle 1996). Today the environmental movement can best be characterized as aiming for the preservation of environmental amenities, freedom from pollutants, and a sustainable balance between society and natural ecosystems.

It also must be noted that despite the publicity given to what had become widely recognized environmental issues and newly discovered problems, such as depletion of ozone in the stratosphere and climate change, the final decades of the twentieth century and the early years of the twenty-first saw a conservative backlash (Kline 2000; K. Gottfried, personal communication). The impact of this movement on public attitudes is of crucial importance to our study. The general interests, concerns, and activities of the American people would seem to be the most likely source for any changes in the stories and illustrations in children's picture books. Although assessment of public concern varies somewhat depending upon the questions asked, in general, expressions of environmental concern rose during the 1960s consistent with the rise of the modern environmental movement and declined somewhat in the 1970s. Levels rose again during the 1980s reaching a peak in 1990 (Bell 2009). Concern tended to decline for the remainder of the twentieth century. However, the level of concern remained sufficiently high such that Dunlap (2002) was able to describe the overall trend as an "enduring concern." Nevertheless, the concern level continued to decline during the first decade of the twenty-first century with a 2009 Gallup poll finding that for the first time since they began measuring public attitudes toward environmental issues a majority said economic growth should have priority over environmental protection. Between 2000 and 2008, there was a decline of around 10 percent of those indicating the environmental movement has done more good than harm (Dunlap 2010). In general, however, while public concern may have waned to some extent, the environmental movement continues to be a significant aspect of American culture. It is thus reasonable to posit that the rise of the environmentalism over the past century may have influenced the stories and images in children's books.

Isolation from the Natural Environment

In addition to the loss of natural areas, by 2005, America's urban population had increased to 80.8 percent (Globalis 2009). Furthermore, the number of visitors to national parks and participation in other nature-based activities have been declining since the 1980s (Pergams and Zaradic 2007). The decline is not limited to wilderness areas, but also with what Kellert (2002: 142) refers to as "encounters with familiar, nearby, and 'everyday' nature." This, he says, has resulted from "the elimination, fragmentation, isolation, and contamination of pockets of naturalness once

characteristic of most neighborhoods and communities, even in urban areas." Not only do children grow up in urban areas where "wildness has been severely impoverished" (Nabhan and Trimble 1994: 11), but there has been movement toward more organized activities away from even "everyday" nature to playgrounds and indoor recreation (Chudacoff 2007). Research also has found that many parents are afraid to allow their children to play outside without adult supervision (Spodek 2005). Modern technology could be a factor keeping children from playing outdoors. Brooks-Gunn and Donahue (2008: 3) report that, "America's young people spend more time using media than they do engaging in any single activity other than sleeping."

Research also suggests declining exposure to information about environmental issues. Daniels (1996) analysis of children's science textbooks from 1950 to 1991 found a marked decrease in the treatment of environmental themes, and Shanahan and McComas (1999) charted a pattern of decrease in references to the environment in television entertainment and news programs during the 1990s. A study of general-audience magazines found that after the 1960s, nature was less common in the imagery and text (Podeschi 2007). The pattern across media types combined with the decline in participation in nature-based activities suggests that there has been a substantial change in the place and salience of nature in the broader culture.

A growing number of researchers have expressed concern about how increasing isolation from the natural world and declines in media content about nature may lead to less appreciation and understanding of ecological problems (e.g., Kahn and Kellert 2002; Louv 2005; Nabhan and Trimble 1994; Wells and Davey Zeece 2007). Pyle (1993: 145), for example, states "I believe one of the greatest causes of the ecological crisis is the state of personal alienation from nature in which many people live." Of course many environmental problems emanate from urban activities, and exposure to them can be a direct source of concern. Actual or mediated contact with natural ecosystems would seem a more likely source for fostering a deeper understanding of environmental issues.

The massive decline in biodiversity is a clear example of the need for environmental awareness and concern. According to the IUCN Red List (2010), 36 percent of all known species on earth are threatened with extinction. Thomashow (2002: 10) asks, "How is it that we are on the verge of the sixth megaextinction and so few people seem to know or care?" Recognition of the seriousness of this issue requires at least some understanding of the critical importance of biological communities in producing and sustaining essential functions for life on earth. As Mills (2010:98) has indicated, "The vast majority of species comprising Earth's biodiversity are wild.

Without them, we humans would not and could not exist." We know that habitat loss is a major cause of species endangerment and that urbanization has played a role in this loss. A far greater impact, however, has been through withdrawals of resources used primarily for supporting urban economies, such as through logging, large-scale industrialized agriculture, wetland draining, and mineral, gas, and oil extraction (Czech, Krausman, and Devers 2000). These activities are taking place outside of urban areas. Thus, one possible answer to Thomashow's (2002: 10) question of why "so few people seem to know or care" is the decline of contact with and understanding of the natural world. Bixler and Floyd (1997), for example, found that limited exposure to natural areas is associated with apprehension or even fear of this kind of environment leading to preference for indoor recreation and manicured parks. In a more recent study, Bixler, Floyd, and Hammitt (2002) found that children's exposure to nature led to more positive attitudes and interaction. For many, however, it may simply be a case of "out of sight, out of mind." From having little contact with or understanding of nature, environmental issues like biodiversity decline and deforestation may appear vague, confusing, and irrelevant to one's life. On the other hand, studies provide support for a connection between experience in natural environments and understanding, concern, and action with respect to environmental problems (e.g., Bixler, Floyd, and Hammitt 2002; Chawla 2007; Ewert, Place, and Sibthorp 2005; Wells and Lekies 2006).

To the extent that children's books reflect what is taking place in society, increasing isolation from the natural world may result in a decline in stories and scenes of nature. Just as researchers have looked to see whether picture books are helping to promote gender and ethnic equality, whether we are to deal effectively with environmental problems, it will be critical that people are familiar with nature and care enough about it to want to understand and help solve environmental problems. Of course, the stories and images in children's books are not a substitute for direct contact, but research clearly indicates that literature can play an important role in developing a better understanding and appreciation of the natural world and its wildlife inhabitants (Mobley, Vagias, and DeWard 2010; Thomashow 2002; Wells and Davey Zeece 2007).

One central aspect of children's books in cultivating a connection with and caring about nature is the presence of animals. Nabhan and Trimble (1994: 96-97) note that "…as floral and faunal narratives play less of a role in keeping us alert to the fate of other biota, we are more likely to let their existence slip through our fingers without noticing this loss." Myers and Saunders (2002) state that learning to care about animals provides a bridge to caring about the natural world.

The Sample

While some children's books are written to promote appreciation and understanding of environmental issues [e.g., Dr. Seuss (1971); Larson (1998)], most children's books do not share this focus. However, all provide representations of environments and/or animals. Our sample consists of the 296 books chosen as Caldecott winners or honorees between 1938 (the first year of the award) and 2008. Rather than use a representative sample of books, we wanted to maximize the likelihood of examining books that young children are most likely to encounter. The Caldecott awardees are the children's books judged to have the best illustrations by the American Library Association. The books are important both because the award leads to strong sales and they are featured in schools and libraries and influence tastes for children's literature more generally (Maryles 1997).

Variables

Beginning with the first page of a story, there are 8,067 images in the books. We used a coding procedure similar to the one developed by Dunlap and Catton (1983) coding each image for the presence of natural, built, or modified environments. Natural environments were those that appeared relatively unchanged by humans, such as a forested area. This category included areas that Kellert (2002) referred to as "everyday" nature.[1] Anything constructed by humans, such as a house, was considered a built environment. Modified spaces were neither entirely natural nor built, such as manicured lawns or cornfields. As multiple types could be present in one image, we recorded whether each type was present and which served as the primary environment. Animals were coded as domestic, wild, or anthropomorphic. However, it was decided that as the messages anthropomorphized animals convey to children may be quite different from those treated as real, it would be preferable to defer discussion of anthropomorphized animals to another paper. The presence of interaction was coded whether a human began the action or it originated from the environment or animal. Similar to studies examining the presence of stereotypes of women or minority groups, we coded whether nature or an animal was portrayed negatively. We recognized that while negative images may have undesirable influences, such as fostering a fear of forests or wild animals, they also may be used instructively with respect to environmental problems, and thus, a separate code was used for this possibility. We used a similar coding procedure for story themes and objectives.

We collaboratively developed the variables and discussed how the cod-

ing should proceed. Intercoder reliability was assessed with a random sample of ten books. Across all the variables, we averaged 91 percent agreement, with a range of 81-99 percent.

Because images are nested in books and because our dependent variables are dichotomous (i.e., presence or absence of content), we rely on two-level Bernoulli models. Multilevel modeling accounts for the multicollinnearity between image and book (Bryk and Raudenbush 1992), and Bernoulli models compute change in a dichotomous dependent variable in terms of logged odds, similar to logistic regression. The sole independent variables in our models are time and, when statistically significant, time-square and time-cube. Time is measured in years from 1938 to 2008 and then centered around zero. As time varies by book rather than by image, the time variables are book-level variables.

Findings

Figures 1-3 present all statistically significant ($p < 0.05$) results from models examining change over time with respect to environment and animal content (tables available upon request). Considering environments, built environments were depicted in 58 percent of the images and were the major environment 45 percent of the time. Natural environments were present in 46 percent of the images and were the major environment 32 percent of the time.

It can be seen in Figure 1a that early in the time period studied, built and natural environments were almost equally likely to be present, and both in fact grew more common into the 1960s. After this point, there is a divergence, with the built environment presence increasing linearly and the natural environment presence showing a curved decline. The gap between these two types of environments grew from the 1970s to the end of the study period. Figure 1b shows the trends for the primary environment in an image. In this case, natural environments were initially more likely to be the primary environment. That situation soon reversed, however, and after the late 1950s, built environments were more likely to be a primary environment in an image. This gap widened in every subsequent decade.

Wild animals were somewhat more likely than domestic animals to be present or to be a subject in a story. However, Figure 2 shows that the probability that either would be present in an image declined significantly over time. Figure 2 also shows that the probability of a domestic animal serving as a subject declined sharply after 1938 into the 1980s. There was a slight rise after this, but the likelihood of finding domestic animal subjects in an image in the 2000s is less than half that of the early years in our study.

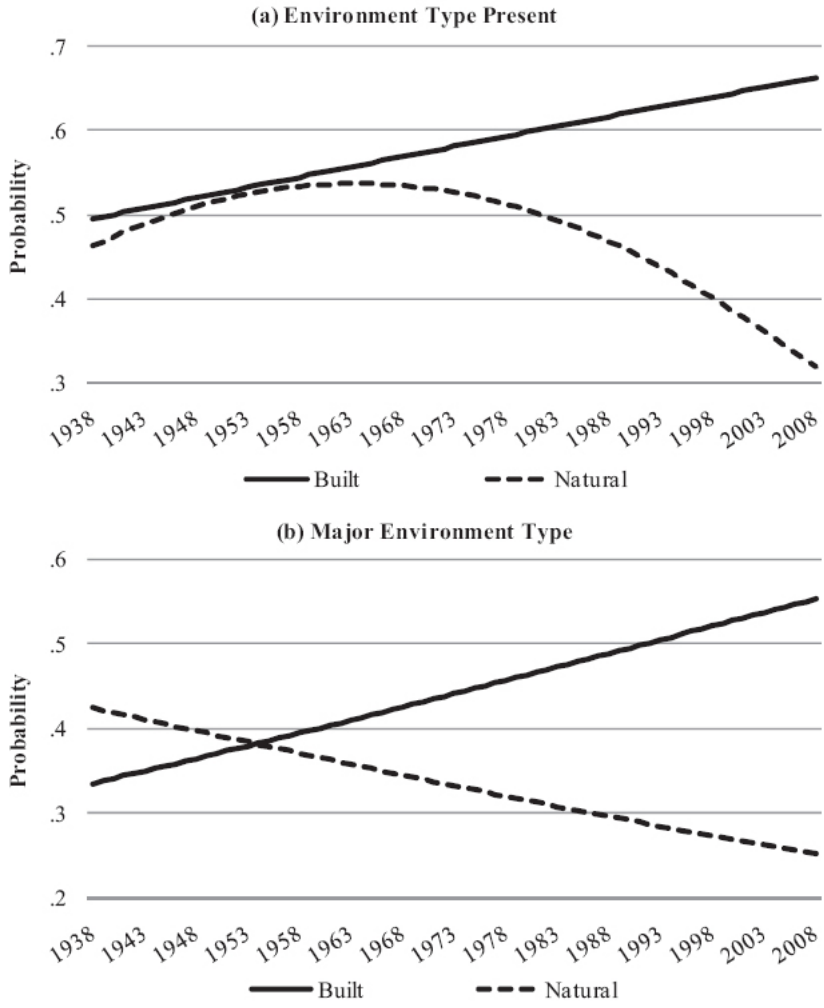

Figure 1 Time Changes in the Probability of Presence of Environment Types in Images in Caldecott Books, 1938-2008.

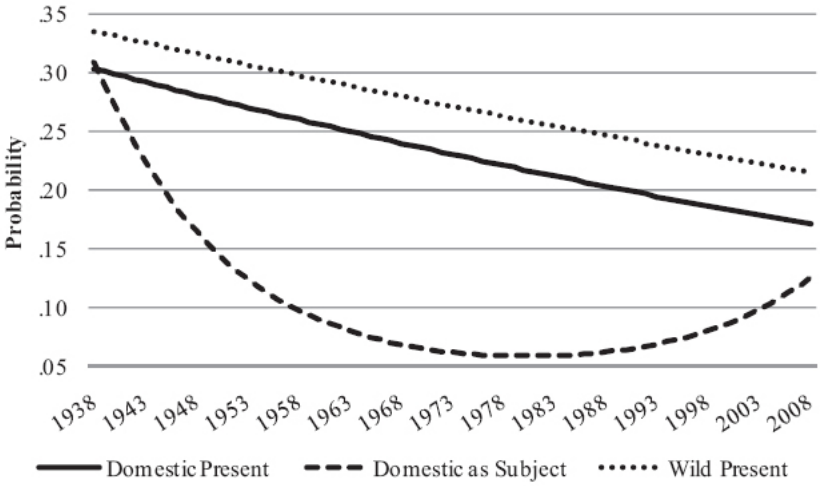

Figure 2 Time Changes in the Probability of Presence of Animal Types in Images in Caldecott Books, 1938-2008.

Results from two-level Bernoulli models examining human interactions with environments and animals and negative depictions of environments and animals are depicted in Figure 3. Figure 3a shows that the probability of human interaction with a natural environment increased through the 1970s and then declined. Interaction with wild animals was slightly more likely than interaction with a natural environment until the 1950s. From the 1960s onward, interaction with wild animals declines steadily. Interaction with domestic animals drops sharply in the early years of the study and then is fairly constant before declining toward the end of the study period.

Interactions of all sorts are relatively infrequent overall, but reach their lowest levels during the twenty-first century. Figure 3b plots significant changes in the probability of negative images over time. After a decline in the late 1940s and early 1950s, negative images of natural environments became more probable, peaking in the 1980s. This is followed by a sharp drop. However, Figure 1b shows that the likelihood of seeing any illustration of a natural environment had declined considerably. Negative images of built environments also became more probable through the 1980s before also dropping at the end of the study period. In this case, however, by the end of the study period, the likelihood of seeing a built environment

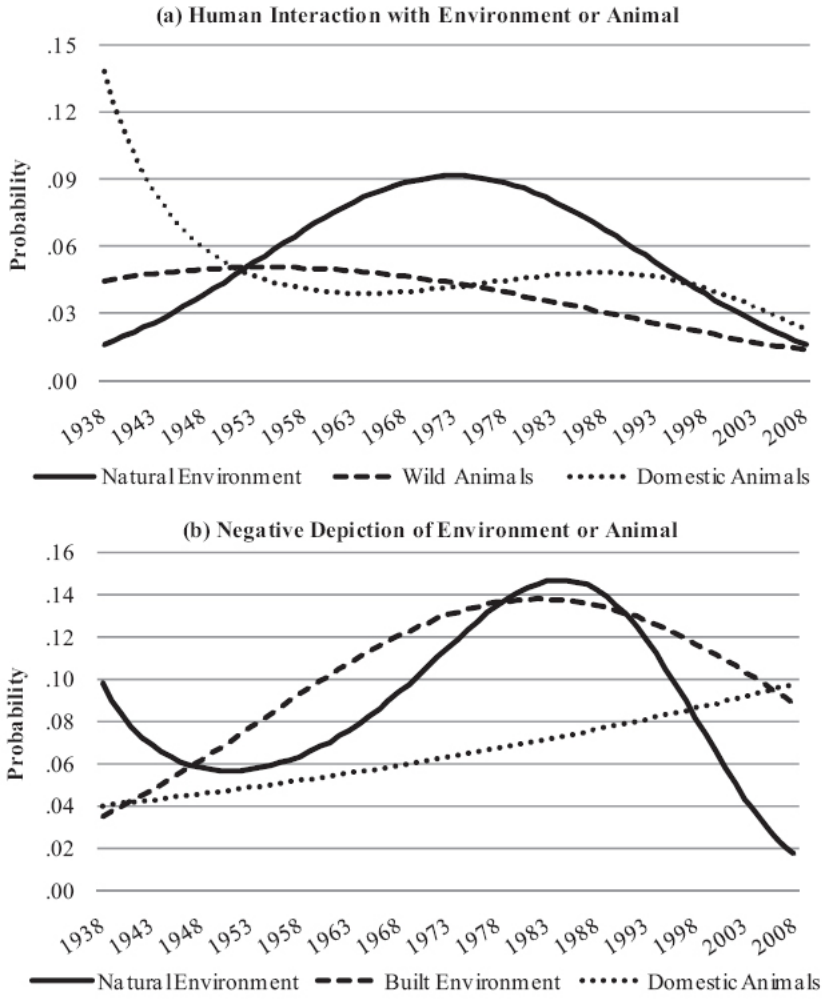

Figure 3 Time Changes in the Probability of Human Interactions with Environments and Animals (a) and Negative Depictions of Environments and Animals (b) in Images in Caldecott Books, 1938-2008.

had increased. The probability of a negative image of a domestic animal climbed throughout the study period without reversing, but, as shown in Figure 2, the likelihood of images containing domestic animals, subject or not, had fallen.

As mentioned previously, we anticipated that some negative illustrations may have been used to convey explicit messages about environmental problems rather than serving simply as negative depictions. In a careful examination of all the images coded as negative, only one, Peet (1989), clearly drew attention to an environmental issue. With respect to story themes, only one other book, McLimans (2006), expressed any concern or provided any information regarding an environmental problem. For the most part, illustrations coded as negative show unpleasant or potentially dangerous natural conditions such as bad weather, volcano eruptions, and floods. A handful of images provide what could be interpreted as critical commentary on environmental problems, but the intent of the author and/or illustrator is unclear. For example, an illustration in Lawson (1940) depicts an industrial area with numerous smokestacks emitting huge quantities of black smoke. No reference is made, however, to this being a problem. It seems just as likely to have been intended as a scene of industrial progress.

Summary and Conclusions

The two possible sources of change examined in this research, isolation from nature and the rise of environmentalism, are not mutually exclusive. Doubtless, some people are indifferent to or ignorant of environmental degradation while others are aware of environmental problems and deeply concerned. Both views also may be found among the writers and illustrators of children's books and the judges who select books for the Caldecott award. Nevertheless, we share Daniels (1996) surprise when she found that rather than reflecting a culture of environmentalism, children's science textbooks since 1950 showed a decline in all environmental themes.

Caldecott winners and honor books have given less attention in recent years to the natural world and more attention to built environments. Throughout our study period, Americans have lived in and around built environments, so it is not surprising that this kind of environment would be prominent in children's stories. What we find in these books, however, is not a consistent proportional balance of built and natural environments, but a significant and steady increase of built environments, both by mere presence and as the major environment. Natural environments have all but disappeared. Human interaction with the natural environment increased in the early decades of the study period, but began to de-

cline by the mid-1970s and has been declining ever since. Interestingly, although nature is included less in recent books, when present, it is less likely to be portrayed negatively.

Just as images of nature have declined, so have the images of animals. The likelihood of a wild animal playing a role in a story, as opposed to simply being included in a picture, did not change significantly, but with increasingly fewer wild animals being included in the stories, there is less likelihood of a child being exposed to any wild animals, subject or not. The likelihood of a domestic animal as a subject declined up to the 1980s, but the increase since then remains far less than in the early years of the study.

If we ask what today's children are learning about the environment from contemporary picture books, perhaps the most important answer is that for the most part they are reading stories set in built environments. They are exposed to relatively few images of the natural environment and even fewer images of humans interacting with nature. They also are seeing less human interaction with animals than in the past. Scenes of interaction with wild animals have never been common, but have become even less so in recent years. Perhaps because interaction with domestic animals is relatively rare in the more recent books, when it is shown, it is more likely to play an important role in a story.

We cannot say that increasing isolation from the natural world influenced the content changes we have found in children's picture books, but the increase in built environments and the decline in natural environments and wild animals are certainly consistent with it.[2] It is clear, however, that environmentalism has not taken a prominent place among the 296 books we have examined. This does not mean, of course, that environmentalism is not an important part of American culture, but it does suggest that the current generation of young children listening to the stories and looking at the images in children's books are not being socialized, at least through this source, toward greater understanding and appreciation of the natural world and the place of humans within it.

The aforementioned decline in support of the environmental movement during the 2000s decade (Dunlap 2010) is consistent with the decline in depictions of the natural world and its wildlife inhabitants. Furthermore, according to a recent Gallup (2009:2) news release, "The environment is not a high salience issue for Americans at this time, and has a low top-of-mind presence when the public is asked about priorities for government." In conclusion, our analysis of children's books, along with studies of other media and the research showing declines in nature-associated recreation, strongly suggests that there is a broader trend in American society worthy of further investigation.

Endnotes

[1]As with any concept, "nature" is a social construction and if it is used as part of a nature-society (or natural-built) distinction its validity problems are significant (see Cronon 1996). However, social constructions are consequential. Indeed, despite the problematic aspects of the distinction, the world is still experienced through the lens the nature-society dichotomy provides. Furthermore, nature and related concepts such as wilderness and wildlife remain powerful symbols and objects of environmental concern. In fact, as mentioned above, research has found that these can be crucial elements for motivating people to care about environmental hazards of all sorts.

[2]Another possible factor contributing to the proportional increase in built environments could have been the inclusion beginning in the 1960s of more books featuring persons of color living in urban/built environments. We examined the books with primary non-white characters or non-white ethnic themes from 1970 to 2008, years that capture both the beginning and the establishment of multiculturalism in children's literature (Bader 2002, 2003). Instead of finding these books primarily set in urban environments, we found they are less likely to include built environments and more likely to include natural environments compared to the "non-multicultural" books.

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